

Clark and Reinson, 1990

Data Set 13

Reference: Clark, J.E. and G.E. Reinson, 1990, Continuity and performance of an estuarine reservoir, Crystal Field, Alberta, Canada: in Sandstone Petroleum Reservoirs, J.H. Barwis, J.G. McPherson, and J.R.J. Studlick, eds, Springer-Verlag, p. 343-361.

Reference: G.E. Reinson, J.E. Clark, and A.E. Foscolos, 1988, Reservoir geology of Crystal Viking field, Lower Cretaceous estuarine tidal channel-bay complex, south-central Alberta: American Association of Petroleum Geologists Bulletin, v. 72, n. 10, p. 1270-1294.

Author's affiliation: Westcoast Petroleum Ltd.

Age: Early Cretaceous (Albian)

Formation: Viking Formation, Colorado Group

Location: Crystal Field, Cretaceous Western Interior Basin, Alberta, Canada

Wells: 2-1-46-4 and 4-1-46-4 W5M wells

Depth range: 5500-6000 feet.

Depositional Environment: "The Crystal reservoir sand body is interpreted to be a multistage estuarine tidal channel-bar complex which is flanked by laterally equivalent bay-fill 'muddy' sediments. Mapping indicates that the reservoir sand body comprises three successive but partially superimposed channel depositional cycles ("A" pool) and an upper less channelized and lower-energy depositional event which forms a shallow channel-bar deposit ("H" pool)." ... Five lithofacies have been recognized; see categories listed below with the porosity and permeability data. Photographs and further descriptions of lithofacies are available in the second reference.

Alteration: "The principal diagenetic features of the conglomerate and conglomeratic sandstone lithofacies are compaction and silica cementation as syntaxial quartz overgrowths. Primary intergranular porosity was not greatly reduced by these processes. In fact, the chert-rich intervals display more mechanical and chemical compactional effects than do the quartz-rich intervals because, although silica is present, fewer nucleation sites (i.e. monocrystalline quartz grains) are accessible for syntaxial overgrowth cementation." ... "Silica cementation is quite significant in the two finer-grained units (fine-grained shaly sandstone and fine-grained laminated sandstone) as it occludes much of the primary intergranular pore space." Characteristics of each facies, taken from Table 14-1 of the reference, are summarized with the data.

Production: oil

Core measurement conditions: conventional core analysis

Data entry: manual entry from Figure 14-8 of the referenced paper. Fig. 14-8 uses closed curves to separate the lithofacies; all data are shown as solid black dots. Where lithofacies overlap, we have assigned alternate data points to different facies in order to indicate the data overlap.